



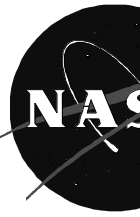
THE SOCIAL LIFE OF A DATA BASE

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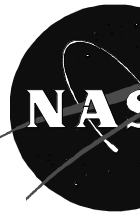


Social Construction of Mechanisms of Memory



- It is well known that memory is socially constructed
- Studies have examined various mechanisms of social memory:
 - Archives (Trouillot)
 - Memorial Statuary (Nora)
 - Historical Theme Parks (Samuel)
 - Museums (White)
 - Holiday Observances (Connerton, Yerushalmi)
 - Institutional Narrative (Linde)

Data Bases: The Invisible Memory Mechanism



Social science has paid little to data bases as socially constructed forms of memory

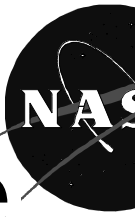
Computer data bases are viewed as purely technological objects

One might think that social aspect of data bases lies in the processes of their construction

However, databases are embedded within complex work systems

- Many continuous forms of human work required to produce and maintain their function

These work practices are invisible to designers and users



The Human in the Machine

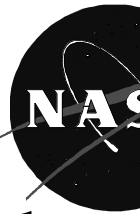
- This paper shows some of the complex social life of a large data base:
 - Construction of data entries,
 - Human escorting of data within and across organizational boundaries,
 - Ongoing movement between paper and electronic data recording
 - Social practices which compensate for design deficiencies, but also mask their existence.

Data of the Study: A Large-Scale Problem Reporting Data Base



- We discuss a study of a NASA data base for reporting problems discovered in the inspection and refitting process for the Space Shuttle
 - PRACA (Problem Reporting And Corrective Action)
- PRACA is a complex system, distributed among several NASA centers and contracting organizations.
 - This complexity is not unique to NASA: many public and private institutions maintain enormous data bases, incorporating legacy systems which are resistant to change because their structure is no longer apparent.

The PRACA Study

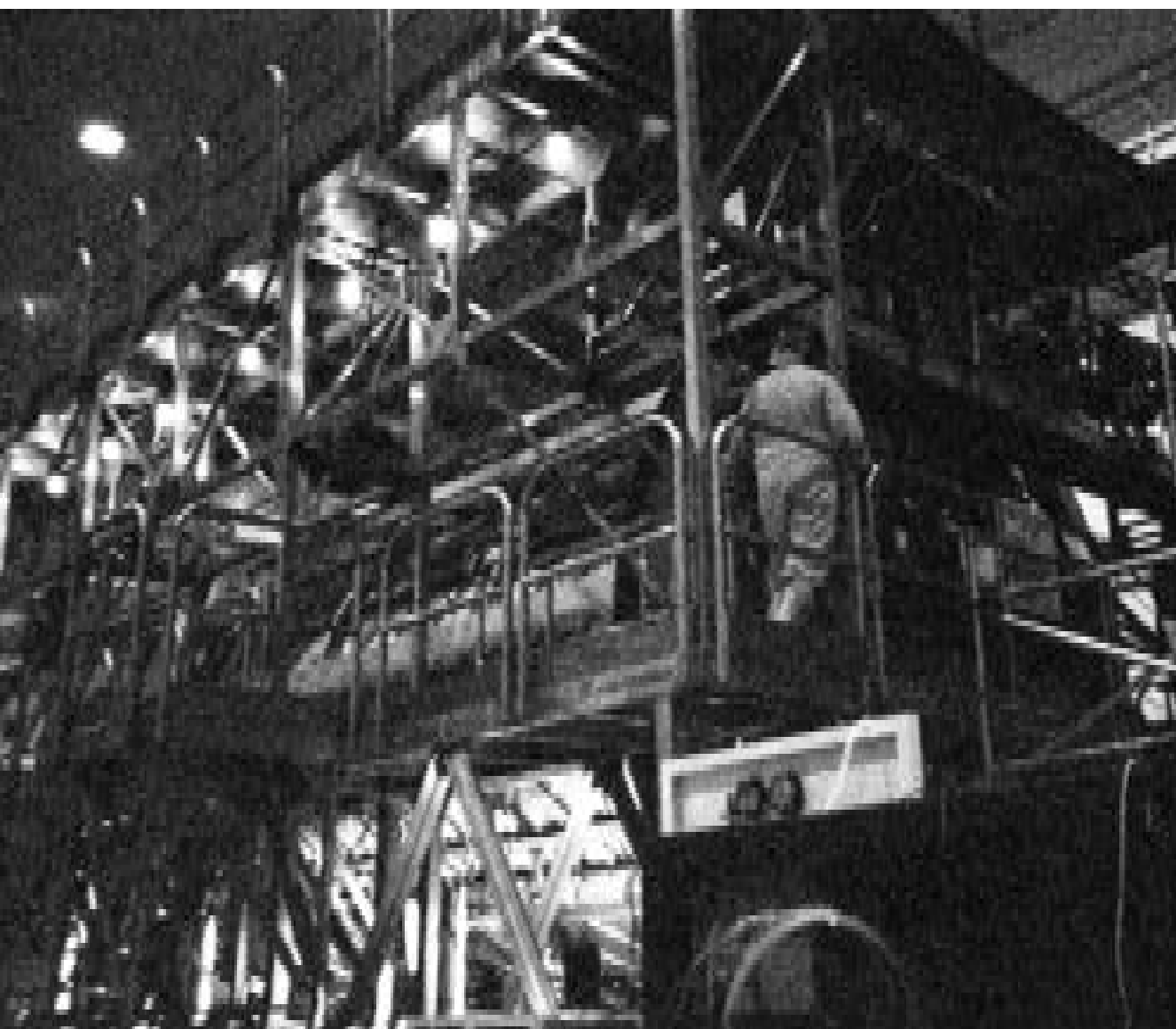


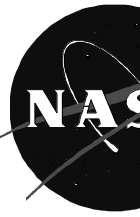
The study of the work system of PRACA reported on here was part of a larger study mapping the locations, technologies, languages, and institutional responsibilities for PRACA

Purpose: evaluate & quantify the technical aspects of PRACA systems in order to recommend enhancement and future system upgrades.

Method: preliminary study of work practices

- Interviews with data base users and managers at two sites
 - Kennedy Space Center – shuttle refitting
 - Johnson Space Center – go/no go decision on shuttle flight
- Complete study would involve ethnographic observation



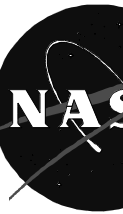


PRACA and Paper

- **PRACA is thought of as a data base, but moves from paper to electrons to paper to conversation at various stages of its use**

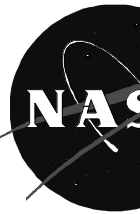
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Multiple Uses of PRACA



- **Work Process Scheduling**
- **Flight Readiness Decision-making**
- **Statistical Analysis of Part and Process Failures**
- **Data for Mandated Investigations**

The Work of PRACA



Initial Problem Entry

Checking the form and the work

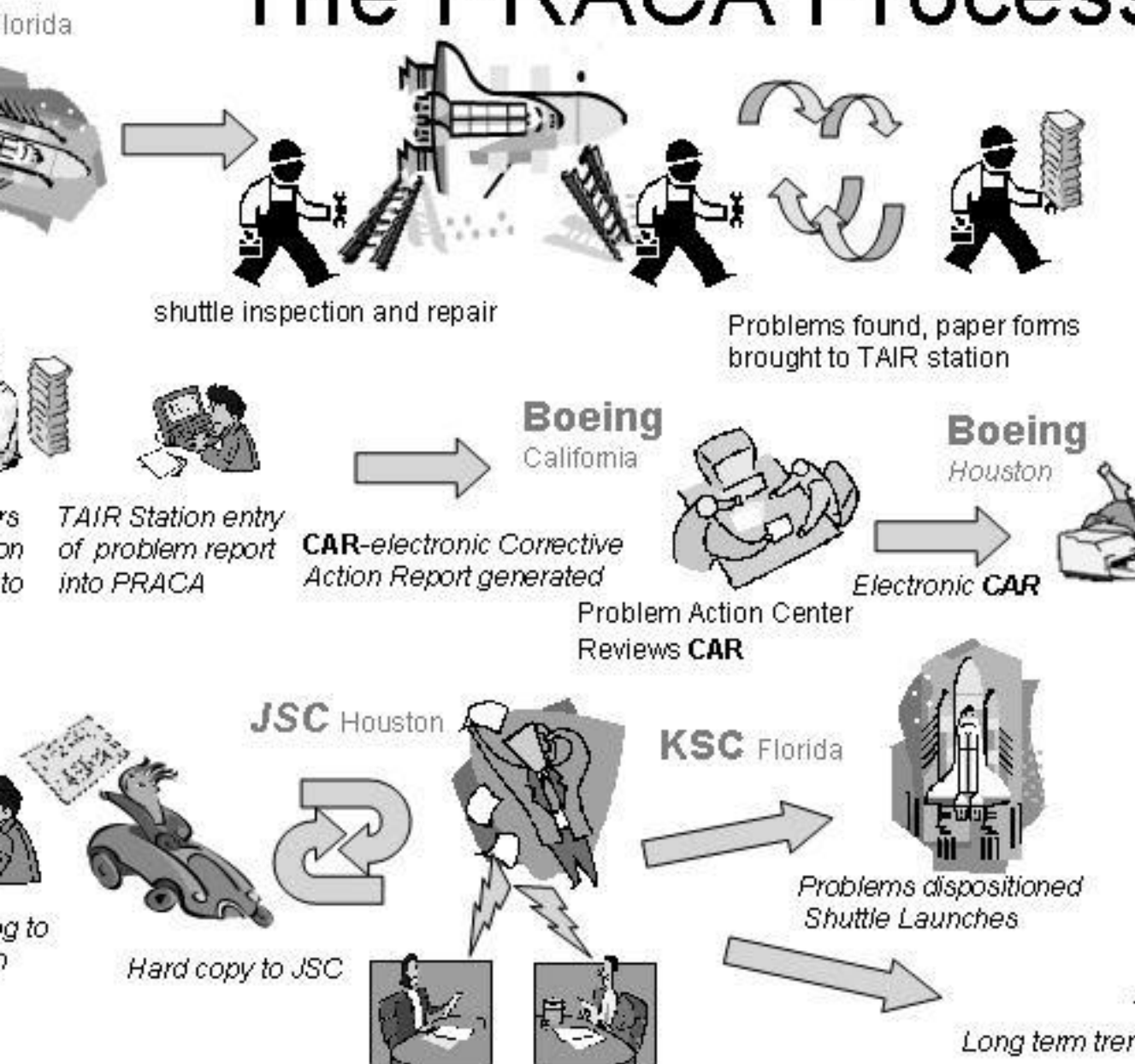
Passing the report from KSC to JSC

Getting report to Deputy Manager for Operations
Space Shuttle Vehicle Engineering Office —
(Go/No go decision maker)

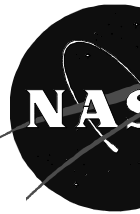
Tracking required repairs

Using PRACA retrospectively

The PRACA Process



Multiple Forms of Invisibility



- Each of the above uses is invisible to users of all other types
- Paper instantiations of PRACA are invisible to computer designers and users
- Work of making PRACA work is invisible to high-level users

Such Systems are Everywhere

This is an outmoded system

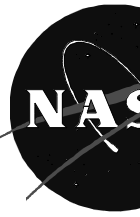
- Opaque to users
- Possesses emergent properties not intended by or known to original designers
- No single owner of the design or implementation

Such systems are more the rule than the exception:

Legacy data bases are everywhere

- Legacy data bases imply the existence of complex work practice systems, not just outmoded machines languages

Two Morals to the Story



- Data Base Designers and Users
 - Be aware that data entry, interpretation and use are pervasively social activities, part of an integrated work system
- Anthropologists
 - Begin the analysis of these complex memory technologies as a locus for ongoing social activity as well as initial social construction